(4) require CellularVision to pay 85% of the average auction value of the New York BTA less the New York PMSA for which it already holds a commercial license, presumably pursuant to an equitable formula that takes into account the varying population densities of the New York PMSA and the BTA.

The Commission's proposed renewal and grandfathering of CellularVision's current commercial license as well as its grant of a pioneer's preference to CellularVision are based on an appropriate legal and equitable analysis of the circumstances attendant to the Hye Crest Order and the First NPRM in this protracted multi-year proceeding. Specifically, with regard to the status of CellularVision both as the only commercial LMDS licensee in the U.S., and as the pioneer of LMDS, the Commission in the Third NPRM stated that

> Since our tentative decision on its pioneer's preference in the First NPRM, CellularVision has begun serving a significant number of customers within its New York license area. Therefore, we do not believe it is in the public interest for us to continue proposing, in the context of a pioneer's preference award, that CellularVision voluntarily discontinue service in New York and turn in its license. Moreover, we believe that CellularVision has made a commitment to providing service in New York, as evidenced by the fact that it has applied for additional cell cites to cover the remainder of the PMSA.[31]

Accordingly, the Commission appropriately expressed its ". . . intention to accommodate CellularVision's operations within the New York PMSA to the maximum extent possible, while minimizing adverse effects of its operations in the 28.35-28.50 frequency band on eventual GSO licensees."[32] Based on the Commission's careful consideration of the relevant factors, as well as the supporting views of the

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[31] Third NPRM, para. 71.

[32] Id., para. 72.

commenters,[33] there is an ample record to support Commission grant of its proposals regarding CellularVision's commercial license and pioneer's preference.[34]

NYNEX Corporation's ("NYNEX") claim that CellularVision should not receive a 1 GHz license because it currently employs FM analog technology[35] is simply preposterous as it ignores the reality that CellularVision has already been granted a one GHz commercial license for the New York PMSA, and further suggests that the Commission should eliminate a thriving FM-based LMDS industry that currently is using 28 GHz spectrum effectively to serve the public. CellularVision's current FM analog technology provides subscribers in New York with a studio quality television picture, with a signal to noise ratio of over 50 dB at the fringe of the coverage area that is superior in performance to both coaxial cable (43 to 47 dB) and MMDS (40 dB).

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[33] See Comments of CellularVision, supra note 7, at pp.6-12; Comments of RioVision, Inc., CC Docket No. 92-297, September 7, 1995, p.3; Comments of Bell Atlantic, CC Docket No. 92-297, September 7, 1995, pp.9-10; Comments of Titan, CC Docket No. 92-297, September 7, 1995, p.3; Comments of GHz Equipment Company, Inc. ("GHz Equipment"), CC Docket No. 92-297, September 7, 1995, p.5; Comments of Pacific Telesis Wireless Broadband Services ("Pacific Telesis"), CC Docket No. 92-297, September 7, 1995, p.2

[34] As to GTE's argument that it is no longer appropriate for the Commission to award to CellularVision a pioneer's preference license since the Commission now utilizes spectrum auctions, the Commission has already considered and rejected that argument, holding that it would continue to apply its existing pioneer's preference rules to pioneer's preference proceedings in which tentative decisions had been made at the time Congress authorized the Commission to conduct spectrum auctions, including the LMDS proceeding. See In the Matter of Review of the Pioneer's Preference Rules, First Report and Order, 9 FCC Rcd 605 (1994), Memorandum Opinion and Order on Remand, 9 FCC Rcd 4055 (1994) (Commission amended its rules to require pioneer's preference recipients in proceedings where tentative decisions had been made at the time Congress enacted auction legislation to pay for their licenses), recon. denied, 9 FCC Rcd 6837 (1994).

[35] See Comments of NYNEX, CC Docket No. 92-297, September 7, 1995, p.6.

Based on current technology, 1 GHz is recognized as the minimum capacity necessary to offer viable competition in today's video marketplace.[36] Moreover, for LMDS to be a viable competitor to cable television, an LMDS operator, regardless of the channelization scheme employed, needs access to the equivalent amount of spectrum capacity enjoyed by coaxial and hybrid coaxial-fiber-based cable systems, 1 GHz. The record is unequivocal that CellularVision and other LMDS proponents are receptive to implementing digital compression technology when and if it is commercially viable, but awarding an insufficient allocation of 28 GHz spectrum today based on a misguided belief that digital compression is commercially available for LMDS will merely ensure that LMDS will not be a current viable competitor to wire-based systems.[37] The fact that digital technology simply is not commercially feasible today for LMDS operations is well established in the 28 GHz Rulemaking.[38]

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[36] See Comments of Texas Instruments, CC Docket No. 92-297, September 7, 1995, p.15; Comments of ComTech, CC Docket No. 92-297, September 7, 1995, p.2; Comments of Hewlett-Packard Company, CC Docket No. 92-297, September 7, 1995, p.5; Comments of Bell Atlantic, supra note 33, at p.3; Comments of RioVision, supra note 33, at p.2; Comments of GHz Equipment Co., supra note 33, at p. 2; Comments of BellSouth, supra note 7, p.6; Comments of Northern Telecom, CC Docket No. 92-297, September 7, 1995, pp.3-4; Comments of Endgate Corporation, CC Docket No. 92-297, September 8, 1995, pp.4-5; Comments of Titan, supra note 33, at p.4; Comments of Pacific Telesis, supra note 33, at p.1.

[37] See Comments of CellularVision, supra note 7, at pp.14-15; Comments of The Wireless Cable Association International, Inc. ("Wireless Cable"), CC Docket No. 92-297, August 28, 1995, p.3; Comments of Titan, supra note 33, pp.3-4; Philips Electronics North America Corporation, Ex Parte submission in CC Docket No. 92-297, June 14, 1995, p.2.

[38] See supra note 30; Comments of CellularVision, supra note 7, at n. 18. Accordingly, Teledesic's argument that the Commission should require all users of the 28 GHz band to use digital compression technology, which is nothing more than a transparent anti-competitive attempt to prevent LMDS from being a viable competitor

The Commission also should reject Hughes's request for a firm three-year deadline for CellularVision to vacate its current operations at 28.35-28.5 GHz. In 1991 the Commission commercially licensed CellularVision to use the 27.5-28.5 GHz spectrum in the New York PMSA. In so doing, the Commission gave CellularVision and its investors a sound legal basis — and in fact encouraged CellularVision — to expend substantial financial resources to deploy a multi-cell LMDS system in that 1 GHz of spectrum throughout the vast 1,100 square mile New York PMSA. As a result, CellularVision could have opposed the Commission's proposal to require CellularVision to vacate the upper 150 MHz of its commercial allocation. CellularVision did not oppose the proposed grandfathering period of the later of three years or until a GSO/FSS system is successfully launched because it is a reasonable compromise that will provide regulatory certainty for both LMDS and FSS investors.

Notwithstanding CellularVision's conciliatory approach to the Commission's compromise plan for allocating the 28 GHz spectrum, Hughes now introduces yet another ploy to force 28 GHz incumbent CellularVision out of its commercially licensed spectrum prematurely so that it can hoard that spectrum for potentially years beyond the three-year transition. Under the Commission's proposal, Hughes will obtain access to the 150 MHz in question in three years or when it has successfully launched a satellite using that spectrum — clearly, the Commission's proposed standard provides Hughes with certainty, and any claim to the contrary is disingenuous. Importantly,

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in the cable and telephony marketplaces, must be rejected. See Comments of Teledesic, supra note 2, at n.2.

since there is every possibility that the launch of Hughes's $6.2 billion "paper" system[39] could be delayed in countless ways (technical, financial and/or regulatory), Hughes or any other GSO/FSS applicant proposing to use the 28.35-28.5 GHz spectrum should not be able to lock up the 150 MHz of spectrum in question that it may never use. Accordingly, Hughes insistence on a date-certain upon which CellularVision must vacate its commercially licensed spectrum is totally unacceptable, as there simply is no legitimate basis to force such eviction until a GSO/FSS system actually is launched and using the spectrum, particularly since recent press reports about Hughes's September 29 amendment to its Spaceway application indicate that Hughes may be "scaling back" its Spaceway proposal as Hughes instead seeks to use substantial additional licensed spectrum for its Galaxy system.[40]

In addition, Hughes's suggestion that the Commission's proposed "successfully launched" provision could provide an incentive for an LMDS licensee to seek to stall the licensing of GSO/FSS systems implies that an LMDS licensee would seek to abuse the Commission's processes and that the Commission would not protect its interests in licensing new technologies. Hughes should not presume that the LMDS industry will succumb to the same transparent anti-competitive motives which it and Teledesic have openly exhibited during the past year in opposing the grant of CellularVision's 34 pending applications for new transmitters to deploy its commercially licensed

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[39] See Application of Hughes Communications Galaxy, Inc. For Authority to Construct, Launch and Operate Spaceway, July 26, 1994, p. 94.

[40] See J. Cole, "Hughes Seeks Big Expansion In Satellite Slots," The Wall Street Journal, October 2, 1995, at A4.

system throughout its authorized service area.[41] Moreover, CellularVision is confident that the FCC will be vigilant in policing its processes to ensure that they are not misused by competitors seeking to delay the introduction of new services.

IV. LMDS Service Rules

A. Spectrum Licensing

Based on CellularVision's experience as the pioneer of LMDS and as the only commercially licensed LMDS operator in the United States, CellularVision has maintained throughout this proceeding that each LMDS operator needs 1 GHz of spectrum in order to be able to offer vigorous and natural competition in the multichannel video distribution and local telephone marketplaces.[42] CellularVision also has stated that while it prefers that the Commission issue one 1 GHz LMDS license per BTA, if the Commission decides to divide the 1 GHz allocation into multiple licenses, it is absolutely essential that it permit a single entity to aggregate each license block, constituting the full 1 GHz in a single geographic area.[43]

Most of the commenters who addressed this issue agree with CellularVision in

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[41] See Opposition of GE Americom to Application filed by CellularVision of New York, L.P. for System Expansion, File Nos. 1-CF-95 [sic] through 33-CF-95 [sic], filed September 7, 1995; Joint Comments of Harris Corporation-Farinon Division and Digital Microwave Corporation, filed September 25, 1995; Petition to Hold in Abeyance by Hughes Communications Galaxy, Inc., filed September 1, 1995; Comments of Teledesic Corporation, File Nos. 1-CF-P-94 [sic] through 1-CF-P-94 [sic], filed September 1, 1995.

[42] See Comments of CellularVision, supra note 7, at p. 14.

[43] See id.

advocating a minimum 1 GHz allotment per LMDS operator.[44] Moreover, of those commenters that believe the Commission should divide the 1 GHz LMDS allocation into multiple licenses, several recommended that the Commission permit the aggregation of 1 GHz by a single entity in each service area.[45]

The lone exceptions which argue for a fragmented licensing scheme without significant opportunity for aggregation are GTE Service Corporation ("GTE") and a new commenter in this protracted proceeding, Entertainment Made Convenient International, Inc. ("EMC").[46] The support by EMC, in particular, for a fragmented LMDS licensing scheme appears to be due to the misguided belief that digital compression technology is being used today to significantly expand the capabilities of MMDS, video dialtone and cable systems.[47] However, EMC's erroneously optimistic view about the status of the implementation of digital compression technology in MMDS, video dialtone and cable systems is rebutted by the public

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[44] See Comments of Texas Instruments, supra note 36, at p.11; Comments of ComTech, supra note 36, at p.2; Comments of Hewlett-Packard, supra note 36, at p.5; Comments of Bell Atlantic, supra note 33, at p.3; Comments of GHz Equipment, supra note 33, at p.2; Comments of BellSouth, supra note 7, at p.6; Comments of Northern Telecom, supra note 36, at pp.3-4; Comments of Endgate, supra note 36, at p.5.

[45] See Comments of NYNEX, supra note 35, at pp.5-6, n.16; Comments of Wireless Cable, supra note 37, at p.5.

[46] See Comments of GTE, CC Docket No. 92-297, September 7, 1995, p.4 (suggesting an allocation of two LMDS licenses per market, each composed of 425 MHz in the 27.5-28.35 GHz band, and 75 MHz in the 29.1-29.25 GHz band, with aggregation permitted by waiver); Comments of EMC, CC Docket No. 92-297, September 7, 1995, p. 7. (suggesting four 212.5 MHz LMDS licenses and three 50 MHz LMDS licenses per service area, with a 475 MHz cap per entity per service area).

[47] See id.

statements of industry leaders and by recent developments which have been documented in the record in this proceeding.[48]

For example, as CellularVision discussed in its Comments, cable system operators state that they are not abandoning their analog systems and plan to implement digital technology only on an extremely limited basis.[49] Additionally, the fact that digital compression technology is not yet ripe in the area of video dialtone is demonstrated by Southern New England Telephone's ("SNET") recent notification to the Commission that it had abandoned its plans to use digital technology in its video dialtone trial due to "economic and technological factors beyond SNET's control."[50] LMDS is a technology ready for immediate deployment today, and the FCC must not let myths about digital technology impact its decisionmaking process.

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[48] See supra note 30; Comments of CellularVision, supra note 7, at n.18.

[49] See Comments of CellularVision, supra note 7, at n.18, wherein CellularVision noted that Wilton Hildenbrand, Vice President of Technology, Cablevision Systems Corp., explained in June 1995 that in building cable systems "[w]e're not counting on digital in our designs . . . [w]e're designing as if we have to take the system all the way out with analog channels." CellularVision also noted that Christopher Bowick, Jones Intercable Vice President-Chief Technical Officer, explained in August 1995 that Jones, which is in the midst of rebuilding its cable system in Alexandria, Virginia, will not include digital service at first, and is reserving only 100 MHz of bandwidth for eventual digital service because, as Mr. Bowick stated, digital set-top boxes still are not well developed, and "[w]e won't deploy them until they're cost-effective."

[50] Specifically, SNET said that several factors contributed to the delay in its ability to provide digital capability, including the fact that the necessary digital headend equipment and digital TV set-top signal converters are not yet commercially available and the continuing evolution in the modulation scheme. See In the Matter of Southern New England Telephone Company, To Amend Existing Authorization to Construct and Operate, on a Trial Basis, a Video Dialtone Platform for Provision of Programming to Subscribers, Application to Further Amend Existing Authorization to Conduct a Video Dialtone Trial, File No. W-P-C 6858, September 1, 1995, pp.5-7.

Moreover, to be competitive today and to remain competitive in the future, an LMDS operator must have access to an equivalent amount of spectrum as its competitors because they, like LMDS, will utilize digital compression to expand their capacity if that technology becomes commercially viable in the future.

Another new commenter, M3 Illinois Telecommunications Corporation ("M3 Illinois"), makes a similarly uninformed and misleading assertion by claiming that "LMDS equipment is not readily available on the market." Based on CellularVision's status as the pioneer of LMDS and as the only commercial LMDS licensee in the U.S., CellularVision can categorically rebut this unsupported assertion of M3 Illinois. Contrary to M3 Illinois's mischaracterization of LMDS equipment availability, CellularVision currently is working with a number of prominent companies, including Titan, MA/Com, Inc., AEL Industries, Inc. and mmTech, that are supplying equipment for its commercially licensed 28 GHz LMDS system in New York. Despite the fact that the Commission has not yet adopted final rules for the licensing of LMDS nationwide, these companies nonetheless have committed substantial resources during the past several years to develop and produce LMDS equipment in substantial volume for the deployment of CellularVision's commercial service throughout the vast 1,100 square mile New York PMSA. Because of this activity as well as the substantial related research and development and commercial activities of the other LMDS interests, these and other LMDS equipment suppliers are poised to meet the needs of a nationwide competitive LMDS industry. Furthermore, the LMDS equipment manufacturing industry will develop exponentially once the Commission has adopted

final licensing rules for LMDS in the 28 GHz band.

B. Geographic Service Areas

CellularVision reiterates its support for the FCC's reasoned proposal to use Basic Trading Areas as the service area for LMDS, and notes the virtually unanimous support from commenters for that proposal.

C. Eligibility

CellularVision restates its deeply held view — one shared by the United States Small Business Administration[51] — that LMDS has broad-based application and appeal for small businesses who can, through LMDS, compete in the traditionally entrenched cable and local telephone industries. CellularVision therefore urges the Commission to thoughtfully embrace a flexible regulatory approach to LMDS that promotes maximum competition among service providers, and in particular encourages new entrants and a diversity of service providers in this dynamic new service.

D. LMDS Services and Regulation

Those commenters who address the scope of LMDS services concur with the

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[51] See Ex parte filing, United States Small Business Administration, CC Docket No. 92-297, filed June 8, 1995; Comments of the Chief Counsel for Advocacy of the United States Small Business Administration in Support of the Motion to Proceed by CellularVision, CC Docket No. 92-297, February 14, 1995; Comments of the Chief Counsel for Advocacy of the United States Small Business Administration on the Second Notice of Proposed Rulemaking, CC Docket No. 92-297, March 28, 1994.

Commission's view of LMDS as a dynamic vehicle for the delivery of a diverse range of new consumer services, including multi-channel video, telephony, data and unlimited interactive services. In licensing LMDS, the Commission should remain committed to maximum licensee flexibility in the robust utilization of the 28 GHz spectrum so that LMDS licensees can offer any combination of services, including video, telephony, data and interactive services. Licensing LMDS operators in a manner that ensures operator choice based on their marketplace needs will maximize the extent to which an operator can respond to the particular needs of consumers within each service area on a cell-by-cell basis.[52] Accordingly, CellularVision urges the Commission to make regulatory flexibility the fundamental element of its regulatory scheme for LMDS in order to allow each operator to maximize efficient use of the spectrum and benefits to the public.[53]

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[52] In this regard, the Commission should reject Teledesic's request that LMDS be specifically limited to fixed point-to-multipoint services. See Comments of Teledesic, supra note 2, at n.3. Teledesic provides no basis to support this request, which, by artificially and unnecessarily restricting the potential of LMDS, is contrary to the Commission's vision of LMDS, counter to Congressional mandate to encourage new technologies and contrary to the public interest.

[53] CellularVision is puzzled by the statement of GHz Equipment that it "has developed its own distribution system and spectrum utilization scheme which some observers believe to be superior in theory and in practice to the CellularVision approach." Comments of GHz Equipment, supra note 33, at p.3. Throughout this lengthy proceeding, GHz Equipment has never disclosed that it had developed its own LMDS system. In particular, during the Negotiated Rulemaking, in which each member of the Committee disclosed the parameters of its LMDS, FSS or MSS system so they could be scrutinized and used in interference calculations, GHz Equipment, a member of the Committee, did not disclose any such system and in fact never represented that it had developed its own system.

E. Technical Rules

1. Frequency Coordination

With regard to rules for coordination between LMDS service providers, CellularVision notes the overwhelming support for the Commission's proposal to adopt only limited standards that facilitate coordination between geographically adjacent LMDS systems and between LMDS and MSS feeder links where they share spectrum.[54] CellularVision also supports the Commission's proposal to adopt only limited standards to facilitate coordination between LMDS service providers at the boundaries of service areas.[55]

However, CellularVision does not support NYNEX's call for the establishment of an independent "Technical Advisory Committee" to "conduct technical fact-finding" and "further develop" LMDS proposals.[56] As the LMDS Rulemaking has been ongoing already for almost three years, and the voluminous record in this proceeding already includes the results of one Negotiated Rulemaking of which NYNEX was a member, any such "advisory committee" would be redundant and unduly delay resolution of this proceeding and the commencement of new services to the public.

With regard to the Commission's request for comment on the adoption of

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[54] See Comments of Northern Telecom, supra note 36, at p.8; Comments of Texas Instruments, supra note 36, at p.20; Comments of Hewlett Packard, supra note 36, at p.8; Comments of ComTech, supra note 36, at p.9; Comments of Pacific Telesis, supra note 33, at p.3; Comments of BellSouth, supra note 7, at p.13; Comments of Endgate, supra note 36, at p.5

[55] See Comments of CellularVision, supra note 7, at p.23.

[56] See Comments of NYNEX, supra note 35, at 7.

specific power flux density (PFD) limits at service area boundaries to facilitate coordination, CellularVision reiterates its position that such limits are not necessary and notes the lack of support for such limits in the Comments in response to the Third NPRM. CellularVision believes that the absence of such PFD proposals indicates that there is no need for adoption of any PFD limits.

2. Equivalent Isotropically Radiated Power ("EIRP")

a. EIRP Limits on Hub-to Subscriber Transmissions

In its Comments, CellularVision opposed the Commission's proposed EIRP limit of -52 dBW/Hz for LMDS hub and subscriber transmitters, explaining that such a limit was premature and would restrict the flexibility of LMDS designs.[57] For hub transmitters, both Northern Telecom and ComTech believe that the Commission should not adopt the -52 dBW/Hz limit since it is too restrictive, with Northern Telecom suggesting an EIRP limit of no less than -40 dBW/Hz to accommodate still-evolving system designs, and Endgate supporting a limit of -18 dBW/Hz.[58] On the other hand, Hewlett-Packard and BellSouth have indicated support for the EIRP limit of -52 dBW/Hz, and Texas Instruments has supported this limit with the stipulation that the measurement bandwidth be a minimum of 1 MHz.[59]

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[57] See Comments of CellularVision, supra note 7, at p.27.

[58] See Comments of Northern Telecom, supra note 36, at pp.8-9; Comments of ComTech, supra note 36, at p.10; Comments of Endgate, supra note 36, at p.6.

[59] See Comments of Hewlett-Packard, supra note 36, at p.2; Comments of BellSouth, supra note 7, at p.13; Comments of Texas Instruments, supra note 36, at p.10.

CellularVision reiterates its view that the proposed limit of -52 dBW/Hz would restrict the flexibility of LMDS designs and further that the adoption of any EIRP limit would be inefficient and premature since, as is acknowledged universally, the technology to support LMDS is still evolving. However, in the interest of closure, CellularVision submits that, given the potential impact of any EIRP limit on the ability of LMDS operators to meet buildout requirements, facilitate sharing with satellite systems and exploit evolving technology, an EIRP limit of -35 dBW/Hz with a 1 MHz measurement bandwidth is acceptable.

b. EIRP Limits on Subscriber-to-Hub Transmissions

Both Endgate and BellSouth support EIRP limits of -18 dBW/Hz on subscriber transmitters consistent with the Commission's proposed limit of -18 dBW/Hz in a 20 MHz measurement bandwidth for intercell links.[60] Texas Instruments supports a limit of -37dBW/Hz for subscriber transmitter EIRP, and Hewlett-Packard supports a level of "at least" -30 dBW/Hz.[61] As with the EIRP limit on hub-to-subscriber links, CellularVision believes that the proposed limit of -52 dBW/Hz is too restrictive.[62] More specifically, CellularVision believes that a limit of -35 dBW/Hz, with a measurement bandwidth of 1 MHz, is sufficient to meet the needs of LMDS subscribers and conducive to frequency coordination between service providers at the boundary of

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[60] See Comments of Endgate, supra note 36, at p.6; Comments of BellSouth, supra note 7, at p.13.

[61] See Comments of Texas Instruments, supra note 36, at p.11; Comments of Hewlett-Packard, supra note 36, at p.2.

[62] See Comments of CellularVision, supra note 7, at p.27.

service areas.

CellularVision reiterates its position that active power control and interlocks between the subscriber transmitter and the hub are not necessary to facilitate coordination between service providers or to facilitate any spectrum sharing with satellite services that may be desirable in the future. Such requirements are not necessary. Further, they will only complicate LMDS designs and serve to drive up equipment cost, threatening the low-cost consumer alternative of LMDS service.

3. Spectral Efficiency and Frequency Tolerance

As CellularVision stated in its Comments, CellularVision does not believe that any minimum spectral efficiency measure is necessary for digitally modulated LMDS services. CellularVision believes that since LMDS spectrum will be awarded by auction, multiple access schemes and LMDS' frequency-reuse efficiency will be greater determinants of overall spectrum efficiency of LMDS, and since LMDS is envisioned as a low-cost consumer alternative, no such minimum measures need be established.[63] If any such standard is established, however, CellularVision supports the use of 1.0 bps/Hz as the minimum standard. This level is achievable using cost-attractive, current technology, and has been proposed by numerous LMDS proponents as well as satellite proponents such as Hughes and Teledesic.

NASA has claimed that the 1.0 bps/Hz is outdated and recommends a spectral

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[63] See Comments of CellularVision, supra note 7, at pp.29-30.

efficiency of "no lower than the 4 bps/Hz being achieved in the ATV arena."[64] NASA makes this recommendation in ignorance of the realities of transmission in the Ka-band. As noted above, Hughes Spaceway and Teledesic propose to use QPSK modulation which will achieve a spectral efficiency of better than 1.0 bps/Hz, but below 2.0 bps/Hz.[65] LMDS proponents have likewise made Ka-band proposals using QPSK modulation. The satellite and LMDS proposals are consistent in this regard because of the linear output power limitations of Ka-band transmitter devices — not because they conspire to fritter away the precious Ka-band spectrum.

If commercial transmission in "the ATV [advanced television] arena" is deployed with a 4 bps/Hz spectral efficiency it will be because adequate linear output power to support commercially feasible designs is achievable at such a spectral efficiency level — at frequencies below 1000 MHz. Economically viable system designs for LMDS (or for GSO/FSS or NGSO/FSS) which use higher-order modulations than QPSK are not possible today in the Ka-band. The absence of such proposals should make this conclusion obvious to even NASA. LMDS proponents (and Ka-band satellite proponents) have nothing to gain by limiting their modulation schemes to efficiencies lower than those economically achievable.

Higher order modulations beyond QPSK, while more spectrally efficient, also require more peak power and a higher peak-to-average power ratio in the transmitter

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[64] See Comments of NASA, supra note 9, at p.22.

[65] See Hughes Ex parte letter, CC Docket No. 92-297, March 15, 1995, p.4; "Technical Characteristics of Teledesic Network," NRMC-88, August 9, 1994, p.2.

than state-of-the-art power transmitter sources available for Ka-band systems can provide without critical degradation by intermodulation distortion due to operation in the non-linear range of the transmitter.

With regard to the issue of frequency tolerance for LMDS transmitters, CellularVision notes the pervasive absence of any comments on the Commission's proposals. Consequently, CellularVision reiterates that there is no justification for any such minimum requirements since the LMDS spectrum will be auctioned, and therefore LMDS providers will have the economic incentive to make the appropriate tradeoffs between equipment performance, complexity and cost. Accordingly, CellularVision believes that the Commission's proposal of 0.001 percent tolerance is impossible to achieve for reasonable cost subscriber equipment. CellularVision reiterates its proposal that the Commission exempt LMDS subscriber stations with per-carrier transmitter output power below 500 milliwatts from any frequency stability requirements, or in the alternative, retain the current Part 21 requirement of 0.03 percent for subscriber stations.[66]

V. Competitive Bidding Procedures

A. Spectrum Auctions For LMDS Licenses Will Serve the Public Interest

CellularVision, as preeminently noted in the record, supports the use of simultaneous multiple round auctions for LMDS. In addition, while CellularVision urges the Commission to license one LMDS operator per service area with 1 GHz of

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[66] See Comments of CellularVision, supra note 7, at p.29.

spectrum, from 27.5-28.35 GHz and 29.1-29.25 GHz, if the Commission divides that 1 GHz allocation into more than one license in each service area, the Commission's auction rules must include specific procedures to allow a single entity to aggregate the full 1 GHz in a given service area.

CellularVision also supports the Commission's proposal to adopt reduced up-front payments, bidding credits and installment payments for small businesses to ensure that small businesses have the fullest opportunity to participate in the provision of LMDS services. CellularVision supports the Commission use of these types of preferences consistent with those used and judicially sustained in the PCS context. However, CellularVision encourages the Commission to consider other regulatory devices, including an increased small business bidding credit higher than the 25 percent used in the PCS context, to insure that small businesses have the wherewithal to compete in auctions against entrenched cable and telephone service providers to obtain the 1 GHz of spectrum necessary for a competitive LMDS system.

With regard to the definition of small business, however, if the Commission uses a revenue-based test, CellularVision believes that because of the unique attributes of LMDS the Commission's proposed $40 million annual revenue threshold is too low for LMDS licensees.[67] First, since LMDS is envisioned as a viable

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[67] In promulgating its general rules for the use of competitive bidding to award licenses, the Commission stated that "[g]iven the diversity of services that may be subject to competitive bidding and the varied spectrum costs and build-out requirements associated with each, we conclude that it is more appropriate to define the eligibility requirements for small businesses on a service-specific basis, taking into account the capital requirements of each particular service in establishing the appropriate threshold." In the Matter of Implementation of Section 309(j) of the Communications Act -

competitor to both franchised cable systems and local exchange telephone carriers, if the Commission is to successfully implement the mandate of Congress to encourage the participation of small businesses in this new service, it must adopt a high enough threshold to attract "small" businesses that are large enough to have the wherewithal to compete against entrenched cable and telephone service providers, as well as to bid against them for LMDS licenses.

Also, average consumer bills for multichannel video service typically are significantly higher than average bills for telephone service, despite a lower profit ratio, and since a primary function of LMDS is to serve as a multichannel video provider, an LMDS video provider generally will have higher revenues per person served than, for example, a local exchange telephone service provider. Accordingly, while a $40 million revenue test may be appropriate for PCS, CellularVision submits that a higher threshold is necessary for LMDS providers, who necessarily will have higher revenues per subscriber but not necessarily higher net profits per subscriber. Based on these considerations, CellularVision believes that a threshold of $100 million in annual revenues would be more appropriate in the LMDS context.

With regard to the up-front payment for LMDS auctions, CellularVision explained that the PCS formula, $0.02 per pop per MHz was excessive for LMDS. Accordingly, CellularVision reiterates its position that the Commission should adopt an upfront payment formula for LMDS that takes into consideration the comparatively larger

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Competitive Bidding, Second Memorandum Opinion and Order, 9 FCC Rcd 7245, 7269 (1994).

amount of spectrum necessary to make a viable LMDS service.[68]

B. Spectrum Auctions For Satellite Services Will Serve the Public Interest

CellularVision reiterates its strong support for the Commission's tentative conclusion in paragraph 132 of the Third NPRM to use competitive bidding procedures to award satellite as well as LMDS licenses. It is not surprising that the satellite proponents are coordinated in their vigorous opposition to spectrum auctions for satellite licenses, as the enormously wealthy incumbent U.S. satellite industry has grown accustomed to getting substantial amounts of free spectrum. However, in view of the serious Congressional concern about the mounting federal budget deficit and the Commission's early success in raising more than $7.7 billion from auctions of PCS licenses,[69] spectrum auctions are a sound and inescapable public policy reality that the satellite industry should accept just as CellularVision and the LMDS industry, the PCS industry, the MMDS industry and the IVDS industry have done.

The recent push among the leadership in the 104th Congress to auction the DBS spectrum formerly held by Advanced Communications reflects a prevailing view among lawmakers that satellite operators can no longer expect to be immune from a requirement to pay some value for their spectrum. Moreover, while Congress initially

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[68] See Comments of CellularVision, supra note 7, at pp.33-34, wherein CellularVision explained that at $0.02 per pop per MHz, the upfront payment for a 1000 MHz LMDS license for a BTA with one million pops would be $20 million; for the whole country, the upfront payment would be $5 billion.

[69] See FCC Grants 99 Licenses for Broadband Personal Communications Services in Major Trading Areas, #544546, released June 23, 1995, p.1.

authorized the Commission to use spectrum auctions as an alternative to lotteries or comparative hearings in mutually exclusive licensing proceedings, given the state of the mounting federal budget deficit and the realization that Congress views the substantial revenues that can be generated from the auctioning of spectrum as a means to reduce the deficit, and the overwhelming success of the PCS auctions, the satellite industry should respond to the important public interest and embrace the challenging new fiscal environment we are in — where Congress is likely in the near term to require all commercial users of the spectrum to pay some fee to the government, whether that fee is the winning bid in an auction among mutually exclusive applicants, or that fee is a spectrum use fee that is the equivalent of an auction price in the absence of mutual exclusive applicants.

Accordingly, spectrum auctions and payment to the public for the right to use the valuable 28 GHz band are a fiscal burden that all commercial FCC licensees utilizing that spectrum should shoulder equally. Satellite providers should not be able to escape from paying such fees merely by claiming that the costs of their systems will increase. Moreover, an additional benefit of spectrum auctions and payments is the important reduction in the likelihood of spectrum hoarding, since it is unlikely that any company that commits significant capital to secure a license would not vigorously use that spectrum. Thus, the satellite industry's plea for immunity from spectrum auctions or any type of payment is unpersuasive and reflects a serious indifference to the public good already confirmed by the Commission's PCS auctions.

VI. Timing of FCC Decision/Relation to WRC-95

While the Commission was unable to procedurally process the final comments in the protracted 28 GHz Rulemaking in time for a vote at its October 1995 public meeting, CellularVision urges the Commission to adopt a Report and Order in this proceeding promptly, but in no case later than the December 7 public meeting. The 28 GHz Rulemaking already has languished for almost three years, despite the fact that LMDS is a technology ready to immediately provide its dynamic range of high-quality, competitive services to consumers. The United States position on the 28 GHz band segmentation plan as set forth by the Commission in the Third NPRM is sound, and nothing at WRC-95 should be permitted to impact the reasoned 28 GHz band plan developed by the FCC since this plan will allow several exciting new technologies to be deployed now throughout the United States.

VII. Conclusion

Based on the thoughtful and protracted deliberations that the Commission has already committed to the finalization of its compromise 28 GHz band plan, CellularVision urges the Commission to move forward expeditiously to adopt a Report and Order in this proceeding at its December 1995 public meeting so that the nationwide licensing of LMDS can proceed through spectrum auctions in the first half of 1996. The overwhelming majority of important potential users of the 28 GHz band support the Commission's proposed 28 GHz band plan, and as noted above, those few naysayers who are at odds with the vast majority of commenters have provided no

evidence in the record to support their views. It is time for closure in this fully developed Rulemaking proceeding. The Commission's well-reasoned plan for the robust and prompt use of the largely fallow but valuable 28 GHz spectrum will ensure that the exciting new LMDS technology becomes immediately available to consumers throughout the United States, while simultaneously preserving more than sufficient spectrum for the possible deployment of yet-to-be developed, licensed, financed and launched satellite services. Further delay is not justified, and those who seek further delay of any kind are grossly out of step with the Commission's and the Congress's commitment to the deployment of competitive new services and the public interest.

Respectfully submitted,

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Certificate of Service

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